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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,799	07/10/2003	Byung Jin Choi	PA89/MII-56-38	2298

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EXAMINER	
CULBERT, ROBERTS P	
ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/616,799

Applicant(s)

CHOI ET AL.

Examiner

Roberts Culbert

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/23/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 77-96 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 77-96 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/8/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 2/23/05 with respect to claims 77, 82 and 87 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 77, 79-82 and 84-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,534,073 to *Kinoshita et al.* in view of U.S. Patent 4,551,192 to *Di Milia et al.***

Referring to Figures 2 and 8 and the related disclosure (Col. 19, Line 46 – Col. 21, Line 23), *Kinoshita et al.* teaches a method of manufacturing a vacuum chuck comprising a chuck body (101) having first and second opposed surfaces comprising: forming a plurality of through holes (105) in a first surface and extending between first and second opposed surfaces and forming into the first surface a

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desired formation including a recess (125) having a nadir surface with one of the plurality of through holes disposed in the nadir surface.

Regarding Claims 77, 82 and 87, *Kinoshita et al.* does not explicitly teach that etching is used to form the desired formation including a recess in the first surface.

However, it is notoriously old and well known in the vacuum chuck art that recesses may be conveniently formed in vacuum chuck substrates by etching techniques. For example, *Di Milia et al.* teaches that a pattern may be formed in a vacuum chuck body by lithography (masking) and etching.

It would have been obvious to one of ordinary skill in the art at the time of invention to use etching as a means to form the desired formation including a recess in the first surface. One of ordinary skill in the art would have been motivated at the time of invention to use etching to form the pattern since lithography and etching techniques are well suited to forming patterns in vacuum chuck substrates as taught by *Di Milia et al.*

Regarding Claims 87, 92, and 95, *Kinoshita et al.* teaches that the cross-sectional area of the recess is greater than the cross-sectional area of the through holes. (See Figures 2 and 8, for example)

Regarding Claims 80, 85 and 89, *Kinoshita et al.* teaches that forming the recess further includes providing the recess with an annular shape. (See Figure 8)

Regarding Claims 81, 86 and 90, *Kinoshita et al.* teaches that forming the recess further includes forming a plurality of annular recesses, a subset of which includes one of the plurality of through holes. (See Figure 8)

Regarding Claims 79, 84 and 88, *Kinoshita et al.* does not teach that the desired formation may include a plurality of pins disposed on the first surface.

However it is well known in the vacuum chuck art that a surface of a vacuum chuck may comprise either an annular pattern or a pattern of pins to support the substrate. *Di Milia* teaches the well-known pin-type formation (Figure 1.3)

It would have been obvious to one of ordinary skill in the art at the time of invention to etch a pin-type formation to form a vacuum chuck in the manner taught by *Di Milia et al.* One of ordinary skill in the

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art would have been motivated at the time of invention to use the pin-type formation since it minimizes the possibility of dust particles changing the substrate curvature. See *Di Milia et al.* (Col. 1, Lines 30-43)

Note that U.S. Patent 5,324,012 to Ayoama et al. cited in the previous Office Action also teaches the alternative annular and pin-type formations for vacuum chucks. (See Figures 1 and 3)

Regarding Claims 91, 93 and 96, *Di Milia* teaches that the first surface faces the substrate. (See Figure 2)

**Claims 78 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,534,073 to *Kinoshita et al.* in view of U.S. Patent 4,551,192 to *Di Milia et al.* as applied above to claims 77, 79-82 and 84-96 and in further view of U.S. Patent 5,515,167 to *Ledger et al.***

As applied above to claims 77, 79-82 and 84-96, *Kinoshita et al.* in view of *Di Milia et al.* teaches the method of the invention substantially as claimed but do not teach that the chuck body comprises an optical flat glass. However, it is old and well known in the vacuum chuck art that the surface of the chuck body should be extremely flat and have a finish of high optical quality. (See, for example, *Di Milia et al.* Col. 3, lines 33-38) The high degree of flatness ensures that a substrate is held flat against the chuck body.

*Ledger et al.* teaches that an optically flat glass substrate is suitable for the fabrication of vacuum chucks. (Col. 1, Lines 55-65 and Col. 3, Lines 53-55)

It would have been obvious to one of ordinary skill in the art at the time of invention to use an optically flat glass substrate to form the vacuum chuck. One of ordinary skill in the art would have been motivated at the time of invention to use an optically flat glass substrate to form the vacuum chuck in order to provide a highly flat surface that will not affect the substrate curvature and will further allow optical monitoring as taught by *Ledger et al.*

Note that *Di Milia et al.*, *Kinoshita et al.*, and *Ledger et al.* teach that the second surface of the vacuum chuck body is substantially flat.

Note also that *Ledger et al.* also teaches that various etching techniques are well suited to the formation of patterns in a glass vacuum chuck substrate. (Col. 3, Line 60 – Col. 4, Line 5)

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**Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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